

Claims.

1. A device for detecting infrared radiation comprising a resonator element fixably attached to a supporting frame, characterised in that the supporting frame is arranged to absorb infrared radiation received by the device.
2. A device according to claim 1 wherein the supporting frame comprises a suspended portion spaced apart from the underlying substrate of the device, the resonator element being fixably attached to the suspended portion.
3. A device according to claim 2 wherein the suspended portion is spaced apart from the underlying substrate by a distance that is sufficient to form a resonant absorption structure for radiation having a wavelength within the infrared detection band of the device.
4. A device according to any of claims 2 to 3 wherein the suspended portion is suspended from the underlying substrate on at least one leg.
5. A device according to claim 4 wherein the at least one leg comprises conductive material arranged to provide an electrical connection between the suspended portion and the underlying substrate.
6. A device according to any preceding claim wherein the supporting frame comprises a layer of infrared absorbent material.
7. A device according to any preceding claim wherein the resonator element and the supporting frame have different coefficients of thermal expansion.
8. A device according to any preceding claim wherein the resonant frequency of the resonator element is arranged to vary when infrared radiation is absorbed by the device.

9. A device according to any preceding claim and further comprising oscillation means to drive the resonator element into resonance.
10. A device according to claim 9 wherein the oscillation means is arranged to electrostatically drive the resonator element.
11. A device according to any preceding claim wherein the resonator element is fixably attached to the supporting frame at two or more points.
12. A device according to any preceding claim wherein the resonator element comprises an elongate flexible beam.
13. A device according to any preceding claim wherein the supporting frame comprises a layer of material having an aperture defined therein.
14. A device according to claim 13 when dependent on claim 12 wherein the elongate flexible beam is arranged to lie across the aperture defined in the layer of material.
15. A device according to any preceding claim wherein at least one of the supporting frame and resonator element comprise a shape memory alloy.
16. A device according to any preceding claim comprising a plurality of detection elements, each detection element comprising a resonator element fixably attached to a supporting frame.
17. A device according to claim 16 wherein each detection element has an axis of symmetry.
18. A detector according to any one of claims 16 to 17 wherein each detection element is arranged to output an electrical signal that is indicative of the resonant frequency of the associated resonator element.

19. A detector according to any one of claims 16 to 18 wherein an array of detection elements is provided.
20. A device according to any preceding claim that is formed using a micro-fabrication process.
21. A device according to any preceding claim and further comprising readout electronics.
22. A device according to claim 21 wherein the supporting frame and resonator element are vertically integrated with the readout electronics.
23. A thermal imaging camera incorporating a device according to any preceding claim.